

Section 7

DMS-6210, Vertical Moisture Barrier

Overview

(Formerly D-9-6210, Vertical Moisture Barrier).

Effective Date: August 1998 - February 2002.

This specification shall govern for the materials, composition, quality, sampling and testing of vertical moisture barrier as specified herein.

The moisture barrier shall consist of geomembrane in the form of sheeting or geotextile in the form of coated fabric or fabric-sheeting laminate.

Materials

General

The moisture barrier shall be constructed exclusively of man-made materials.

- ◆ When sheeting is furnished, it shall be of single-layered construction, without seams, and shall be formulated of man-made materials complying with the detailed specifications set forth.
- ◆ Fabric, where furnished, shall be made of either woven or non-woven thermoplastic fibers. Such fabrics shall be furnished precoated on one or both sides or impregnated so as to make the fabric impermeable to water or moisture under the conditions of test set forth in this specification.
- ◆ Fabric-sheeting laminate being furnished shall consist of fabric fused or heat-sealed to sheeting so as to form an integral geomembrane.

The moisture barrier must be able to withstand normal handling and placement at material temperatures from -7 to 63 °C (20-145 °F) without endangering the serviceability of the material in the intended application.

If the moisture barrier evidences delamination, such delamination may serve as grounds for rejection.

The moisture barrier furnished shall be mildew, abrasion, and puncture resistant and suitable for long term burial in the presence of water and/or moisture in the intended construction application.

Physical Requirements

The moisture barrier furnished shall meet the following additional requirements when sampled and tested in accordance with the methods specified.

Moisture Barrier Requirements		
Original Physical Properties:	Test Method	Requirement
Fabric Weight, on an ambient temperature air-dried tension-free sample, expressed as kg/m ² (oz/yd ²)	Test Method “Tex-616-J, Construction Fabrics”	0.22 minimum (6.5 minimum)
Water permeability, as determined when moisture barrier is subjected to the equivalent of a 3.0 m (10 ft) column of water for a period of two (2) hours. Moisture passing through the fabric is determined by weight gain of desiccant. Permeability is expressed as weight in kg/m ² (oz/yd ²) of vertical moisture barrier.	Test Method “Tex-616-J, Construction Fabrics”	maximum 0.02 (0.6 maximum)
Abrasion Resistance. After prescribed sandblast, the moisture barrier shall meet the specification requirement for water permeability. Expressed as weight of water in kg/m ² (oz/yd ²) of vertical moisture barrier.	Test Method “Tex-851-B, Evaluating the Abrasion Resistance of Pavement Marking Materials” modified as follows: 152 mm (6 in) sample distance, 275.6 kPa (40 psi) regulated blast pressure, and one kilogram (2 pounds) of blast medium with a blast time of two (2) minutes plus or minus 15 seconds per one kilogram (2 pounds) of blast medium.	maximum 0.02 (0.6 maximum)
Load characteristics at break or at 100% elongation, whichever occurs first under the conditions of test. Material shall meet specified minimum in both machine direction (MD) or cross-machine direction (CMD), test values to be expressed in Newton (pounds).	ASTM D5034, Grab Test G, with 25 mm x 51 mm (1 in x 2 in.) jaws and constant time to break rate of extension of 20 ± 3 seconds, as specified.	667 minimum (150 minimum)
Apparent elongation at break or rupture, expressed in %.	ASTM D D5034, Grab Test G, with 25 mm x 51 mm (1 in x 2 in) jaws and constant time to break rate of extension of 20 ± 3 seconds, as specified.	20% minimum
Tear strength, determined by the tongue (single rip) method on specimens prepared from “as-received” samples. Specimens are to be tested at a cross-head speed of 305 ± 12 mm/minute (12 ± 0.5 in/minute). Test results are to be	ASTM D 751	67 N (15 minimum)

Moisture Barrier Requirements		
Original Physical Properties:	Test Method	Requirement
calculated by the “average of five (5) highest peaks” method. <i>Both</i> the average of five (5) specimens cut with the longer dimension parallel to the machine direction (MD) <i>and</i> the average of five (5) specimens cut in the cross-machine direction (CMD) shall meet the specified minimum expressed in Newton (pounds).		

Packaging Requirements

The moisture barrier shall be packaged in rolls of the length and width specified on the plans, as directed by the engineer or in the purchase order awarded by the State.

The material furnished on a given roll shall be one piece construction.

Individual pieces of moisture barrier on a given roll being joined together by splicing, lapping, bonding, stapling, etc., will not be acceptable.

The moisture barrier itself shall be uniformly wound onto suitable cylindrical forms or cores to aid in handling and unrolling.

Each roll of fabric and the form or core upon which it is rolled shall be packaged individually in a suitable sheath, wrapper or container to help protect the fabric from damage due to ultraviolet light and moisture during normal storage and handling.

Tagging and Labeling

Each roll shall be identified by a tag or label securely affixed to the outside of the roll on one end. The following information shall be included on the tag or label:

- ◆ A unique roll number, serially designated
- ◆ Manufacturer’s lot number or control numbers, if any
- ◆ Name of fabric manufacturer
- ◆ Date of manufacture
- ◆ Brand name of the product
- ◆ Manufacturer’s style or catalog designation of the fabric, if any
- ◆ Roll width in millimeters or meters (inches)

- ◆ Roll length in meters (yards)
- ◆ Gross weight of entire package, which is to include moisture barrier, core, wrapping and sheath or container identification tag, etc.
- ◆ Tare weight of core, wrapping, sheath or container identification tag, etc.
- ◆ Net weight of fabric alone.

Sampling and Testing Requirements

Samples for testing purposes shall be taken in accordance with Test Method “Tex-735-I, Sampling Construction Fabrics.”

Testing shall be in accordance with Test Method “Tex-616-J, Construction Fabrics” or the test methods stated herein.

Basis for Rejection

Should any individual sample selected at random from 100 rolls, or fraction thereof, fail to meet any specification requirement, then that roll shall be rejected and two additional samples shall be taken, one from each of two other additional rolls selected at random from the same 100-roll lot, or fraction thereof.

If either of these two additional samples fail to comply with any portion of the specification, then the entire quantity of rolls represented by that sample shall be rejected.

Measurement and Payment

Procurement by the State

Measurement and payment for all materials under this specification shall be in accordance with the conditions prescribed in the purchase order awarded by the State.

Contracts

Measurement and payment of all materials governed by this specification and utilized in the performance of work specified in the contract shall be paid for in accordance with the pertinent specification, vertical moisture barrier, in the contract.